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(54) **SYSTEMS AND METHODS FOR EJECTION OF IONS FROM AN ION TRAP**

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See application file for complete search history.

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(57) **ABSTRACT**

The invention generally relates to systems and methods for ejection of ions from an ion trap. In certain embodiments, systems and methods of the invention sum two different frequency signals into a single summed signal that is applied to an ion trap. In other embodiments, an amplitude of a single frequency signal is modulated as the single frequency signal is being applied to the ion trap. In other embodiments, a first alternating current (AC) signal is applied to an ion trap that varies as a function of time, while a constant radio frequency (RF) signal is applied to the ion trap.

6 Claims, 12 Drawing Sheets

